

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference M-1447	FOR FURTHER ACTION	See item 4 below
International application No. PCT/JP2004/016177	International filing date (<i>day/month/year</i>) 25 October 2004 (25.10.2004)	Priority date (<i>day/month/year</i>) 30 October 2003 (30.10.2003)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant HOYA CORPORATION		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).
2. This REPORT consists of a total of 6 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input checked="" type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 24 July 2006 (24.07.2006)
Facsimile No. +41 22 338 82 70	Authorized officer <div style="text-align: center; font-weight: bold;">Masashi Honda</div> e-mail: pt08@wipo.int

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

TRANSLATION

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing
(day/month/year)

Applicant's or agent's file reference

M-1447

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/JP2004/016177

International filing date (day/month/year)

25.10.2004

Priority date (day/month/year)

30.10.2003

International Patent Classification (IPC) or both national classification and IPC

Applicant

HOYA CORPORATION

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/016177

Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/016177

Box No. IV

Lack of unity of invention

1. ☐ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has:
- ☐ paid additional fees
 - ☐ paid additional fees under protest
 - ☐ not paid additional fees
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with
 - ☒ not complied with for the following reasons:

The technical feature of the inventions relating to claims 1-3 is a constitution such that on the back of a transparent substrate opposit the position where a non-device pattern is formed, there is provided light-transmission reducing means for reducing transmission of exposure light.

The technical feature of the inventions relating to claims 4-8 is a constitution such that there is provided means for reducing difference in the reflectivity between a pattern portion of a non-device pattern and non-pattern portion.

The technical feature of the invention relating to claim 9 is a constitution such that on a non-device pattern or in a region in which a non-device pattern is formed, there is formed a fine pattern in which resolution is not essentially performed on a surface to be transferred.

Since the above three technical features do not have a same constitution, it is clear that a group of the above three inventions has no unity of invention.

4. Consequently, this opinion has been established in respect of the following parts of the international application:

☒ all parts

☐

the parts relating to claims Nos. _____

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/016177

Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
	Novelty (N)	Claims <u>3, 5, 6, 8, 9</u>	YES
		Claims <u>1, 2, 4, 7, 10</u>	NO
	Inventive step (IS)	Claims <u>3, 5, 6, 8, 9</u>	YES
		Claims <u>1, 2, 4, 7, 10</u>	NO
	Industrial applicability (IA)	Claims <u>1-10</u>	YES
		Claims _____	NO
2. Citations and explanations:	<p>Document 1: JP 11-133588 A Document 2: JP 4-1436855 A</p> <p>Regarding claims 1, 2 and 10</p> <p>Document 1 discloses a constitution such that, on a transparent substrate opposite the position where a non-device pattern is formed, as light-transmission reducing means for reducing transmission of exposure light falling on a peripheral part of the back of the transparent substrate, there is provided a thin film or film having effects of reducing the transmission of the exposure light.</p> <p>Also, it is obvious that a photomask is used for manufacturing a video device.</p> <p>Therefore, the inventions relating to claims 1, 2 and 10 do not appear to be novel or involve an inventive step.</p> <p>Regarding claim 3</p> <p>No document was found that discloses a constitution such that light-transmission reducing means is formed by surface roughening of a substrate surface.</p> <p>Therefore, the invention relating to claim 3 appears to be novel and involve an inventive step.</p> <p>Regarding claims 4, 7 and 10</p> <p>If is found that, with a photomask described in document 2 (Fig. 2), because a chromium film is formed on a front surface of the substrate, difference in the reflectivity between a step mark (corresponding to a pattern portion of the present application) and a portions other than the step mark (corresponding to a non-pattern portion of the present application) is small.</p> <p>In other words, a chromium film of document 2 is found to be means for reducing difference in the reflectivity between a step mark and portions other than the step mark.</p> <p>Thus, document 2 is found to disclose a photomask comprising means for reducing difference in the reflectivity between the pattern portion and non-pattern portion with respect to the exposure light falling on from the surface and back of the transparent substrate.</p> <p>Also, it is obvious that a photomask is used for manufacturing a video device.</p> <p>Therefore, the inventions relating to claims 4, 7 and 10 do not appear to be novel or involve an inventive step.</p>		

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Regarding claims 5 and 8

No document was found that discloses a constitution of adjusting the reflectivity of a light-shielding film on a pattern portion or non-pattern portion with respect to exposure light so that difference in the reflectivity between the pattern portion and non-pattern portion is reduced.

Therefore, the inventions relating to claims 5 and 8 appear to be novel and involve an inventive step.

Regarding claim 6

No document was found that discloses a constitution such that a non-device pattern is formed by combination of light-shielding films that have different reflectivity between the pattern portion and non-pattern portions with respect to exposure light falling on from the photomask surface but eliminate essential difference of the reflectivity between the pattern portion and non-pattern portion with respect to the exposure light falling on from the back of the photomask.

Therefore, the invention relating to claim 6 appears to be novel and involve an inventive step.

Regarding claim 9

No document was found that discloses a constitution such that, on a non-device pattern or in a region where a non-device pattern is formed, there is formed a fine pattern so as not to essentially perform resolution on a surface to be transferred.

Therefore, the invention relating to claim 9 appears to be novel and involve an inventive step.

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- ☐ complied with
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The technical feature of the inventions relating to claims 1-3 is a constitution such that on the back of a transparent substrate opposit the position where a non-device pattern is formed, there is provided light-transmission reducing means for reducing transmission of exposure light.

The technical feature of the inventions relating to claims 4-8 is a constitution such that there is provided means for reducing difference in the reflectivity between a pattern portion of a non-device pattern and non-pattern portion.

The technical feature of the invention relating to claim 9 is a constitution such that on a non-device pattern or in a region in which a non-device pattern is formed, there is formed a fine pattern in which resolution is not essentially performed on a surface to be transferred.

Since the above three technical features do not have a same constitution, it is clear that a group of the above three inventions has no unity of invention.

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☐ the parts relating to claims Nos. _____

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

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	Claims	<u>1, 2, 4, 7, 10</u>	NO
Inventive step (IS)	Claims	<u>3, 5, 6, 8, 9</u>	YES
	Claims	<u>1, 2, 4, 7, 10</u>	NO
Industrial applicability (IA)	Claims	<u>1-10</u>	YES
	Claims	<u></u>	NO

2. Citations and explanations:

Document 1: JP 11-133588 A

Document 2: JP 4-1436855 A

Regarding claims 1, 2 and 10

Document 1 discloses a constitution such that, on a transparent substrate opposite the position where a non-device pattern is formed, as light-transmission reducing means for reducing transmission of exposure light falling on a peripheral part of the back of the transparent substrate, there is provided a thin film or film having effects of reducing the transmission of the exposure light.

Also, it is obvious that a photomask is used for manufacturing a video device.

Therefore, the inventions relating to claims 1, 2 and 10 do not appear to be novel or involve an inventive step.

Regarding claim 3

No document was found that discloses a constitution such that light-transmission reducing means is formed by surface roughening of a substrate surface.

Therefore, the invention relating to claim 3 appears to be novel and involve an inventive step.

Regarding claims 4, 7 and 10

If is found that, with a photomask described in document 2 (Fig. 2), because a chromium film is formed on a front surface of the substrate, difference in the reflectivity between a step mark (corresponding to a pattern portion of the present application) and a portions other than the step mark (corresponding to a non-pattern portion of the present application) is small.

In other words, a chromium film of document 2 is found to be means for reducing difference in the reflectivity between a step mark and portions other than the step mark.

Thus, document 2 is found to disclose a photomask comprising means for reducing difference in the reflectivity between the pattern portion and non-pattern portion with respect to the exposure light falling on from the surface and back of the transparent substrate.

Also, it is obvious that a photomask is used for manufacturing a video device.

Therefore, the inventions relating to claims 4, 7 and 10 do not appear to be novel or involve an inventive step.

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Therefore, the inventions relating to claims 5 and 8 appear to be novel and involve an inventive step.

Regarding claim 6

No document was found that discloses a constitution such that a non-device pattern is formed by combination of light-shielding films that have different reflectivity between the pattern portion and non-pattern portions with respect to exposure light falling on from the photomask surface but eliminate essential difference of the reflectivity between the pattern portion and non-pattern portion with respect to the exposure light falling on from the back of the photomask.

Therefore, the invention relating to claim 6 appears to be novel and involve an inventive step.

Regarding claim 9

No document was found that discloses a constitution such that, on a non-device pattern or in a region where a non-device pattern is formed, there is formed a fine pattern so as not to essentially perform resolution on a surface to be transferred.

Therefore, the invention relating to claim 9 appears to be novel and involve an inventive step.